DOCUMENT RESUME

ED 043 917 24 CG 005 992

AUTHOR	Entwisle, Doris R.; Webster, Murray A.
TITLE	Raising Children's Expectations for Their Own Performance.
INSTITUTION	Johns Hopkins Univ., Baltimore, Md. Center for the Study of Social Organization of Schools.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.
REPORT NO	R-87
BUREAU NO	BR-6-1610
PUB DATE	Nov 70
GRANT	OEG-2-7-061610-0207
NOTE	32p.
EDRS PRICE	EDRS Price MF-$0.25 HC-$1.70
DESCRIPTORS	*Elementary School Students, *Expectation, Middle Class, *Performance, *Story Telling, Suburban Youth, *Volunteer Training

ABSTRACT

This experiment shows that most children's expectations for their own performance, measured by their rate of volunteering, can be increased. The experiment is closely modeled after laboratory experiments with adults in formal expectation theory. White middle class suburban children of grades 1, 2, 3 and 4 participated in a story-telling task. In this a white adult acted so as to increase expectations of a single child (experimental group), while three other children (control group) received a comparable treatment except for the expectation-raising component. First-grade children showed a positive, but non-significant increase. There was a significant increase for grades 2, 3 and 4. Results for third and fourth graders here are compared with results from an earlier experiment with black inner city and rural white children. (Author)

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THE JOHNS HOPKINS UNIVERSITY

REPORT NO. 87

CENTER FOR THE STUDY OF SOCIAL ORGANIZATION OF SCHOOLS

RAISING CHILDREN'S EXPECTATIONS FOR THEIR OWN PERFORMANCE

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NOVEMBER 1970

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ED043917

Project No. 61610-06-02

Grant No. OEG-2-7-061610-0207

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REPORT NO. 87

Published by the Center for Social Organization of Schools, supported in part as a research and development center by funds from the United States Office of Education, Department of Health, Education, and Welfare. The opinions expressed in this publication do not necessarily reflect the position or policy of the Office of Education, and no official endorsement by the Office of Education should be inferred.

The Johns Hopkins University

Baltimore, Maryland

November, 1970

ACKNOWLEDGMENTS

This research was made possible by the staff and students at Stoneleigh Elementary School. We wish to thank Dr. George Gabriel, Director of Research in the Baltimore County Public Schools, Dr. Evart Cornell, principal at Stoneleigh, and Mr. Charles Wehner, vice-principal at Stoneleigh, for making the necessary administrative arrangements. We are grateful to the following teachers and their students for their generous help and cooperation:

First Grade: Miss Ament, Mrs. Bassford, Miss Nickols

Second Grade: Miss Clark, Mrs. Mueller, Mrs. Murdock

Third Grade: Mrs. Keller, Mrs. Kennedy, Miss Norton, Mrs. Ryan

Fourth Grade: Mrs. Austin, Mrs. Early, Mrs. Slade.

The success of the research also depended upon a group of experimenters whom we wish to thank: Margaret Boeckmann, Barbara Bricks, Ellen Dickstein, Marilyn Katatsky, Judy Kennedy, and Anthony Knepp.

ABSTRACT

This experiment shows that most children's expectations for their own performance, measured by their rate of volunteering, can be increased. The experiment is closely modelled after laboratory experiments with adults in formal expectation theory. White middle class suburban children of grades 1, 2, 3, and 4 participated in a story-telling task. In this a white adult acted so as to increase expectations of a single child (experimental group), while three other children (control group) received a comparable treatment except for the expectation-raising component. First-grade children showed a positive, but non-significant increase. The task was probably too difficult for them. There was a significant increase for grades 2, 3, and 4. Results for third and fourth graders here are compared with results from an earlier experiment with black inner city and rural white children.

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In a previous report (Entwisle and Webster, 1970) we called attention to a body of theory and research findings that would explain some features of experimenter bias and teacher expectancy effects described by others (for example, Rosenthal and Jacobson, 1968; Meichenbaum, Bowers, and Ross, 1969). We then demonstrated experimentally, in ways suggested by the theory, that some children's expectations for their own future performance can be raised, and that the increased expectations will be reflected in behavioral changes by the children. The earlier test included two groups of third- and fourth-graders: some who were black and lived in the inner city, and some who were white and lived in a rural area. The work to be reported here extends the previous test in two ways: 1) the age range of children studied includes grades 1 and 2, as well as grades 3 and 4 previously sampled; and 2) the children in this study are white middle class, so the social class or subcultural-group dimension is extended. Combining data from this study with that of the previous study, there are now three groups of comparable age (grades 3 and 4) who differ in residential locus (black ghetto, white middle class, white rural).

Starting from the work on expectation theory by Berger and his associates (see below), we devised a three-phase experimental treatment to raise expectations of grade-school children. In Phase I a small group of children

(usually four) volunteers words to fill in a story. In Phase II one of the children from the group completes a story by himself and receives a large proportion of positive evaluations of his work; in theoretical terms, his expectations for the quality of his own future performance are increased. In Phase III the small group of Phase I is reassembled, including the specially-treated child of Phase II, and another story is produced by members of the group volunteering words. Generally the child treated in Phase II increased significantly the rate at which he volunteered words to fill in the story during Phase III as compared to Phase I, and this result holds when the increase in his rate of volunteering is compared to that of the untreated children. In this research, the increase in rate of volunteering is the dependent variable, used as the measure of the increase in the child's expectations.

As mentioned, the theoretical basis for this work is contained in a series of papers on "Expectation Theory" (Berger and Snell, 1961; Berger and Conner, 1966; Berger, Cohen, and Zelditch, 1966; Webster, 1969). These workers have proposed a set of formal propositions intended to account for some features of power and prestige structures of small groups, and have subsequently tested the propositions in controlled laboratory settings. Our previous paper represents the first report of application of the theory to a naturalistic setting. The present paper extends

the previous field tests, using the same three-phase procedure.

For this work, the two theoretically relevant components of interaction in informal task-oriented groups are the following:[1] performance outputs, or problem-solving attempts (for example, volunteering an answer); and positive or negative unit evaluations of performance outputs. All observable components of interaction including performance outputs are assumed to be distributed according to expectation states (a theoretical construct) held for the quality of future performance of each individual. The higher the expectations held for an individual, the more likely is he to make a performance output, to have his performance positively evaluated by others, and to develop high positive expectations for his own performances. The level of self-expectations is then inferred from the number of performance outputs. Once formed, expectation states are assumed to affect the very conditions which led to their formation; that is, the positive or negative nature of the unit evaluations of performance outputs.

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1. See Entwisle and Webster (1970) or Webster (1969) for a complete list of the theoretically relevant components of interaction in groups which meet the scope conditions of expectation theory.

METHOD

At the beginning of the sessions, the children were brought together and were told that the researchers were looking for people who could tell good stories. They were to be divided into "teams" and were told that the team which made up the best stories would win a prize. Then one experimenter took each team to a separate room and described the story-telling task to them. The task is to construct a story from a story skeleton which consists of 12 sentences, each sentence missing a crucial part. For example, the second sentence is "One day he had to _____". When words have been supplied for the 12 blanks the story is completed. A word may be evaluated as being either good or bad. Good words are defined as being interesting or exciting, and the "goodness" of a story is then dependent upon its containing a large proportion of good words. The children were told to listen carefully as a sentence was read, and when the blank was reached, to try to think of a good word. Anyone who thought of a good word was to raise his hand, and the experimenter would then select one child to give the "team's word" for that sentence. Children were cautioned not to raise their hands unless they had a good word, for if they were called upon and gave a bad word this would hurt the team score. The purpose of this instruction was to create task orientation as required by the theory.

Before calling on one child for each sentence, the experimenter recorded privately which children were holding up their hands. Raising the hand was the operationalization of making a performance output, the measure used for the expectation state.

The experiment contained three phases. In Phase I, the baseline rate of volunteering for each child was established, and the experimenter did not evaluate any of the words given. He attempted to call upon each child an equal number of times. At the end of Phase I he selected for the Phase II treatment a child who was responding near the median of the group.

In Phase II, the experimenter sent children not selected to another room. These "control group" children listened to a story being read. The child remaining (experimental group) was told that the experimenter was interested in his individual performance, and that he would now have a chance to fill in a story skeleton by himself. The experimenter then made positive unit evaluations for every performance output--he said "very good", nodded, smiled, and in every way consistent with sincerity praised the child's responses. This procedure, if effective, should raise the child's performance expectations for himself at the task, according to the theory.

In Phase III, the original groups were reconstituted and a second team story was constructed, just as in Phase I.

The experimenter noted the number of times each child raised his hand, and again did not evaluate performances. Experimenters were reassigned between Phases II and III to conceal the identity of children who had received the special Phase II treatment.

Children from a white middle class suburb of Baltimore, Maryland, participated in this study. They included approximately equal numbers of boys and girls, with 79 first-graders, 84 second-graders, 112 third-graders, and 103 fourth-graders. All members of a grade in a single school took part. Each story writing team usually consisted of four members of a single sex and grade. In so far as possible the four members of a team were chosen from different classrooms. Some grades were distributed among four classrooms, others were distributed among three. In the latter case, two children were taken from a single classroom, and the remaining two from two other classrooms.

RESULTS

Table 1 shows the mean gain in rate of volunteering from Phase I to Phase III, by grade and sex for treated (experimental group) and untreated (control group) middle class children. Three sorts of changes in the dependent variable are reflected in this table. First, all experimental and control groups showed some increase in rate of volunteering. Second, for all groups except third and fourth grade girls, the increase was greater for children in the experimental than in the control groups. Third, first graders of both sexes show very small differences between treatment groups and there is considerable doubt about the appropriateness of the task for them. Therefore, first graders are omitted from further discussion. A variance analysis for grades 2, 3, and 4 is given in Table 2.

We are interested in changes in Phase I to Phase III and therefore in effects in the lower half of Table 2 (within individuals). Furthermore, we are interested in <u>differential</u> changes from Phase I to Phase III by treatment group, so although the overall change between phases is significant (beyond the .01 level) little interest attaches to this. Major interest is in the significant (beyond the .01 level) treatment by Phase interaction (T x P). The change from Phase I to Phase III differs according to treatment condition, with the experimental group exceeding the control group (see Table 1 for mean changes by grade). The experimental procedure is thus effective overall in raising children's expectations.

In Table 2 the interaction among grade, sex, and phase and among sex, phase, and treatment both approach significance ($p < .10$), suggesting that treatments may turn out to be differentially effective by sex. In line with this, Table 1 shows that girls of the third and fourth grade who receive the experimental treatment actually increase less from Phase I to Phase III than untreated girls. Since this work is still in its early stages, these interactions are suggestive although not significant at conventional levels.

In Tables 3 and 4 further analyses are presented that combine data of third and fourth graders in the present study with data procured earlier (Entwisle and Webster, 1970). The earlier data are for white rural children and black inner city children and also are based on rate of volunteering during Phase I versus rate of volunteering during Phase III. As before, sex, grade, and treatment are factors. Residential locus is now added as a fourth factor. Also, as before, interest is mainly in the lower half of the table (within individuals), which deals with differences between phases. Table 3 shows the mean gains from Phase I to Phase III for children in the experimental and control groups by each category of the design. Table 4 clarifies the pattern of results in Table 3. Overall, the treatment x phase interaction is highly significant ($p < .01$). This confirmation of the overall effectiveness of the experimental maneuver must be interpreted in conjunction with the highly significant ($p < .01$)

three-way interaction between residential locus, treatment-group, and phase. Although the treatment produced significant effects for all three residential groups, it was more effective ($p=.05$) for rural children than for children who live in the suburbs or inner city. Table 3 shows that for every grade-sex subgroup the change produced in rural children substantially exceeds the change produced in suburban or inner city children. Overall there is confirmation of the effectiveness of the story-telling procedure in raising children's expectations. There is also evidence that rural children's expectations are more labile than those of other children studied here.

The combined analyses show (1) that expectations were generally raised significantly in experimental children compared to control children, and (2) that this increase was measurably greater in rural children than in the other groups. Some boys may turn out to be more responsive to the treatment than girls, but this is a matter that needs further study.

DISCUSSION

The results of this study extend the positive findings of our earlier study and demonstrate that white middle class children are susceptible to the creation of specific expectations by this procedure. Although there are other groups that could be studied (for instance black middle class) the range of children for whom the experimental procedure has produced increases in performance outputs suggests that the phenomenon is probably a general one. There are obvious similarities between the completion of a story under the experimenter's direction, the task in these experiments, and many tasks overseen by the teacher in the classroom. In at least a preliminary way, the scope of application of expectation theory has now been extended to situations that frequently exist in elementary education. Some types of teacher expectancy effects may be partially explicable on this basis.

In terms of the goal of modifying expectations in a naturalistic setting, it is important to point out how the significance of social status in this study differs from its significance in other work related to expectation theory. Generally, work of others on status characteristics and expectation states concerns the effect of <u>differential status in assignment of power and prestige within a small group</u>. Thus, Cohen (1968, 1970) has studied groups of black and white boys who attempt to solve a problem together to see who makes more performance outputs, and

Webster (1970) has studied the effect of status characteristics on the effectiveness of evaluation. In Webster's experiment, performances were monitored by evaluators of high status (college students) or of low status (8th graders). In both Cohen's and Webster's studies, the significance of the status characteristic is that, under certain circumstances, differential conceptions of ability arise in accord with the different states of the diffuse status characteristic.

The focus of the present study differs. Here we have groups, all of whose members are <u>equal</u> with respect to a status characteristic (such as sex, age, and race), and the concern is whether the same experimental treatment will raise expectations equivalently for members of each of the status groups in the study. The intent is thus to look at the "demography" of expectations, particularly in naturally-occurring social status groups, in terms of modification. Thus, for example, it appears that rural children are significantly more responsive to this experimental treatment for modifying their expectations for themselves than urban children.

Besides the group characteristic of social class or residential locus discussed above, the characteristics of sex and age level (over 4 grades) are also systematically varied, and may likewise be viewed as demographic variables. Our results indicate, at least in a preliminary way, that lability of expectations by our procedures may be

related to all three factors. These will be discussed in turn.

Grade The data so far available do not offer a clear picture of grade effects. The susceptibility to expectation increase has been small or lacking entirely with first-graders, with third- and fourth-grade girls (white middle class), and with fourth-grade black boys and girls from the inner city. More work is needed on grade effects. Over the grade-school years there are rapid shifts in children's interests and capabilities so that a task suitable at one level may be inappropriate, or relatively ineffective, at other levels. Also, cultural differences may influence the appropriateness of tasks. Ghetto boys may find thinking up stories uninteresting, but other tasks might be more ego-involving. One of the conditions expressly assumed by expectation theory is a high degree of task orientation. It is assumed that the group is collectively oriented and seriously motivated towards high performance of the task at hand. Partial failure to meet any of these conditions would attenuate any observable effects of expectations, or of our attempted experimental manipulation.

Sex A trend, although by no means a firm finding, is that the treatment was more effective for boys than for girls. More work is planned to investigate sex as a status characteristic. Several factors could be at work

here. (1) Female sex role norms, even at early ages, may cause girls to abstain from competition or to observe more deferential "polite" behavior; seeing one girl raise her hand may cause another girl to refrain. For middle class children initial volunteering rates are generally lower for boys than for girls, but boys may have fewer reservations about increasing their rate of volunteering. (2) Because they are generally harder to control in class, boys may generally get much less positive evaluation from their teachers than girls. Considerable evidence exists that the value of a reward depends upon the pattern of rewards and punishments that precede it. The same behavior by the experimenter could thus be more reinforcing for boys than for girls, because its positive character is perceived against a generally less positive background. (3) Girls generally are better than boys at verbal tasks, and therefore may already have fairly high opinions of their own "ability" to supply words. If this were the case, they probably would be less susceptible to the Phase II treatment than the boys. (4) Another explanation along the same lines may be drawn from some research by Adelman (1969). He found that in an academic setting underachievers tend to respond to nonreaction for performance on an academic task as positive reinforcement, while achievers tended to respond to non-reaction as negative reinforcement. Non-reaction,

in other words, is an important part of the patterning of social reinforcement. If girls on the average are higher achievers in elementary school than boys, then the non-reaction of the experimenter in Phase III, following the positive evaluation in Phase II, may be interpreted as negative evaluation by girls, and thus might depress their rate of volunteering.

At present there is no way from our data to choose among these explanations, and, as mentioned, more study is needed to see if sex as a factor accounts for significant variance. Other tasks, not verbal in nature, are currently under development and they may help elucidate sex differences. Experimenter effects which may be linked to sex effects will be studied more systematically in the future.

Status There is a highly significant interaction between residential locus or social class, and the size of the expectancy effect, (see R x T x P, Table 4). The suburban and inner city children, although differing by race and markedly by SES level, responded to the experimental treatment to a similar (and relatively small) extent. The response of the rural children was much stronger (see Table 3). Some questions, now under study, concern the effects of social reinforcers--all experimenters were white middle class, and in that way are similar to the suburban white middle class children. Evidence exists that black children do not perceive such persons as especially

reinforcing or responsive (see Entwisle and Webster, 1970). A replication with black experimenters is now being planned where all other factors are held constant. If race of subject and race of experimenter do interact, this further work may help to explicate the variables producing the interaction.

It seems likely that the effect of the treatment was greatly enhanced for rural children because they attend schools where few breaks in the routine occur. The schools are in remote areas, and so are seldom included in research studies or special programs whereas the other schools are almost continually involved in activities initiated by persons not on the regular staff. Thus the urban and suburban children may be "sophisticated" in terms of serving as research subjects and more skeptical of any attempted manipulation treatment.

Relation to Teacher Expectancy Research Results of teacher expectancy studies have been disputed in some cases (see Barber and Silver, 1968), and unequivocally negative in others (Claiborn, 1969; Jacobs, 1969). The variability in results of our own experiments points to possible sources of difficulty in the teacher expectancy work. First, while most children show slight increases in performance outputs even without much encouragement (the control groups), some children fail to manifest increases in performance even with heavy reinforcement

(black inner city fourth-graders, for example). Earlier we pointed out that white experimenters may not be able to provide very effective evaluations for black children. In the same vein, there are probably other, less obvious, kinds of teacher characteristics that decrease teachers' effectiveness as purveyors of expectancy effects.

Second, expectation theory assumes a task-orientation on the part of students and our experiment assumes a task where ability is equal or irrelevant. Both assumptions may be violated often in the teacher expectancy work, for many school children have little ego-involvement in academic pursuits, and many already have firm ideas about their own supposedly low level of ability. To the extent that children have access to objective standards or to alternative others for evaluating their performances, we would expect that the teachers' expectation for them would decrease in importance.

A third point, made by Claiborn (1969), is that there may be no changes in teacher-pupil interaction--no classroom analogue of our Phase II treatment. If teachers perceive pupils to be of high potential, teachers may alter their behavior, but not all teachers do this (see Kranz, Weber, and Fishell, 1970), and teachers vary in how they change their behavior to suit children's ability. For example, Kranz et al. (1970) show that some teachers behave similarly towards high and average children but differently towards low children. Other teachers change

their behavior towards high ability children and manifest similar behaviors towards average or low children. If, as in most teacher expectancy experiments, a teacher is given false reports about students' potential, she might or might not change her behaviors toward the designated children depending upon how her own behavior pattern is expressed. It is also the case, of course, that since expectations are produced by evaluations, which in most classrooms are dependent upon peers as well as upon teachers, changing expectancies only of the teacher may not be sufficient to produce changes in children's self-expectations.

SUMMARY

Initial pilot studies with third and fourth grade children of both inner city and rural residence demonstrated that most children's expectations for their own performance can be raised. The experiments have now been extended to white middle class suburban children of second, third, and fourth grades. (Middle class first graders, also included in the experiments, displayed only small increases, so further work with other tasks more suitable for them is called for.) These results altogether give strong confirmation to the feasibility of extending the scope of the formal expectation theory developed by Berger and his associates from the laboratory to the classroom. Children's acceptance of action opportunities in a group task calling for verbal outputs can be increased following treatment to increase expectations. The task resembles many ordinary classroom tasks.

While results overall are strongly positive, some inconsistencies require more work. These inconsistencies may have important implications for both the classroom applications and the formal theory. The most provocative inconsistency is the inability of white experimenters to raise expectations of black fourth graders. It is not yet known whether black experimenters can do so.

Table 1. Average Gain in Rate of Volunteering from Phase I to Phase III, White Middle Class Students (N's are in parentheses)

Girls			Boys		
E	C	E-C	E	C	E-C
		Grade 1			
1.27 (11)	0.84 (32)	0.43	1.22 (9)	0.48 (27)	0.74
		Grade 2			
2.78 (9)	1.00 (27)	1.78	2.33 (12)	0.47 (36)	1.86
		Grade 3			
0.36 (14)	0.86 (42)	-0.50	2.29 (14)	0.71 (42)	1.58
		Grade 4			
1.08 (12)	1.46 (35)	-0.38	1.86 (14)	0.52 (42)	1.34

Table 2. Analysis of Variance, Rate of Volunteering, White Middle Class Students, Grades 2, 3, 4.

Source of Variation	d.f.	Sum of Squares	Mean Square	F
Between Individuals				
Grade(G)	2	3.05	1.52	--
Sex (S)	1	2.14	2.14	--
Treatment(T)(Experimental vs. Control)	1	23.97	23.97	--
G x S	2	15.31	7.65	--
G x T	2	88.40	44.20	3.04*
S x T	1	5.73	5.73	--
G x S x T	2	7.90	3.95	--
Between Individuals (I) within GST Groups	287	4173	14.54	
Within Individuals				
Phase I vs. Phase III (P)	1	110.26	110.26	29.96**
G x P	2	10.33	5.16	1.40
S x P	1	1.00	1.00	--
T x P	1	33.61	33.61	9.13**
G x S x P	2	18.88	9.44	2.57
G x T x P	2	7.70	3.85	1.05
S x T x P	1	12.55	12.55	3.41
G x S x T x P	2	7.16	3.58	--
I x P within GST Groups	287	1056	3.68	

* $p < .05$

** $p < .01$

Table 3. Average Gain in Rate of Volunteering from Phase I to Phase II, Three Residential Groups (N's are in parentheses)

Third Grade						Fourth Grade					
Girls			Boys			Girls			Boys		
E	C	E-C	E	C	E-C	E	C	E-C	E	C	E-C
Inner City											
1.92 (12)	1.06 (53)	0.86	2.00 (7)	0.66 (29)	1.34	0.30 (10)	-0.17 (35)	0.47	0.50 (6)	0.29 (24)	0.21
Rural											
2.50 (10)	0.50 (30)	2.00	2.50 (12)	0.58 (36)	1.92	3.00 (5)	-0.41 (17)	3.41	1.40 (5)	0.06 (15)	1.34
Suburban											
0.36 (14)	0.86 (42)	-0.50	2.29 (14)	0.71 (42)	1.58	1.08 (12)	1.46 (35)	-0.38	1.86 (14)	0.52 (42)	1.34

Table 4. Analysis of Variance, Rate of Volunteering, Three Residential Loci, Grades 3 and 4.

Source of Variation	d.f.	Sum of Squares	Mean Square	F
Between Individuals				
Residential Locus (R)	2	46.55	23.27	1.49
Grade (G)	1	3.52	3.52	--
Sex (S)	1	39.67	39.67	2.54
Treatment (T) (Experimental vs. Control)	1	7.96	7.96	--
R x G	2	1.34	0.67	--
R x S	2	5.75	2.87	--
R x T	2	57.34	28.67	1.84
G x S	1	1.34	1.34	--
G x T	1	20.67	20.67	1.33
S x T	1	1.10	1.10	--
R x G x S	2	16.95	8.48	--
R x G x T	2	24.74	12.37	--
R x S x T	2	23.49	11.75	--
G x S x T	1	5.95	5.95	--
R x G x S x T	2	42.11	21.05	1.35
Between Individuals (I) within RGST Groups	497	7747.52	15.59	
Within Individuals				
Phase I vs. Phase III (P)	1	184.82	184.82	52.35**
R x P	2	10.01	5.00	1.42
G x P	1	2.30	2.30	--
S x P	1	0.30	0.30	--
T x P	1	38.77	38.77	10.98**

R x G x P	2	13.93	6.96	1.97
R x S x P	2	7.12	3.56	1.01
R x T x P	2	33.64	16.82	4.76**
G x S x P	1	3.62	3.62	1.03
G x T x P	1	0.18	0.18	--
S x T x P	1	0.04	0.04	--
R x G x S x P	2	6.35	3.18	--
R x G x T x P	2	5.92	2.96	--
R x S x T x P	2	17.97	8.98	2.54
G x S x T x P	1	5.76	5.76	1.63
R x G x S x T x P	2	4.73	2.36	--
I x P within RGST Groups	497	1756.54	3.53	

* $p < .05$
** $p < .01$

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